Appendix G

Information Sheet for Public Meeting

Deepening/Restoration
Kinnickinnic River, Wisconsin
Milwaukee Estuary Area of Concern
INFORMATION SHEET

Purpose

The Wisconsin Department of Natural Resources (WDNR) in partnership with the U.S. Army Corps of Engineers (USACE), U.S. Environmental Protection Agency - Great Lakes National Program Office (USEPA-GLNPO), and the Port of Milwaukee are evaluating the feasibility of improving navigation conditions and removing contaminated sediments from a portion of the lower Kinnickinnic River. The general project objective is to restore the study area to a depth suitable for recreational and potentially commercial navigation while removing contaminated sediments to improve water quality. Funding for the joint effort is being provided through various programs administered by the USACE, USEPA-GLNPO and WDNR. A potential federal funding source for implementation of the deepening/restoration project is the Great Lakes Legacy Act, including a 35% cost share requirement. It is anticipated that the cost-share would be provided by State, local and other non-Federal sources.

Location

The Kinnickinnic River discharges into Lake Michigan via the Federal navigation harbor at Milwaukee, Wisconsin (Figure 1). The project area is an approximately 2000-foot long and 200-foot wide section of the lower Kinnickinnic River located between Kinnickinnic Avenue, the downstream limit, and Becher Street, the upstream limit (Figure 2).

Project Background/History

The Kinnickinnic River is part of the Milwaukee Estuary Area of Concern (AOC). Great Lakes AOCs are severely degraded geographic areas within the Great Lakes Basin. The U.S.-Canada Great Lakes Water Quality Agreement (Annex 2 of the 1987 Protocol) defines AOCs as "geographic areas that fail to meet the general or specific objectives of the agreement where such failure has caused or is likely to cause impairment of beneficial use of the area's ability to support aquatic life."

Historically, the Kinnickinnic River between Lincoln Avenue and Kinnickinnic Avenue, which includes the project area, was designed to accommodate deep draft navigation. Historic nautical charts indicate that the area was dredged as deep as 21 feet between 1915 and 1936. However, in the 1940s, routine dredging was stopped because of a decline in deep draft commercial traffic upstream of Kinnickinnic Avenue. Currently, deep draft navigation depths are maintained by the USACE in the Milwaukee Harbor Federal navigation channels (Figure 1) located downstream of the project area.

Subsequently, water depths in the dredged channel and other portions of the study area gradually declined to the current shallow conditions-0 to 10 feet of water below the Lake Michigan chart datum water level (577.5 feet) as referenced to the International Great Lakes Datum 1985 (IGLD85)- due to the accumulation of sediment and lack of dredging. In addition,

Source: USACE & WDNR. April 7, 2004. Kinnickinnic River, Wisconsin - Milwaukee Estuary of Concern - Deepening/Remediation Concept Design Documentation Report. Appendix G.

the Kinnickinnic River, as a result of evolving urban growth and development between the 1900s and 1970s, has been a receiver of various point discharges, run-off and spills. Such historical practices and lack of regulation resulted in contamination of the sediments, particularly within the study area, with polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs).

Many regulatory and non-regulatory programs, including point source controls, spill reporting and response, hazardous site cleanups, and Brownfield redevelopment programs, as well as the decline in industry, and thus point sources, have significantly reduced the input of contaminants into the Kinnickinnic River. More recently, stormwater control requirements are beginning to address non-point sources. In this regard, regulated point and nonpoint dischargers will not be of concern as significant PCB and PAH sources to recontaminate the sediments in the study area. In addition, the growth of new and existing recreational and commercial based enterprises has required new navigation depths to the study area.

Efforts have been ongoing since the 1980s to address the residual contaminated sediment issue and more recently, new navigation needs, including:

- Multiple studies conducted between 1980s and 1995 by different investigators to define the contamination. Maximum concentrations of 45 parts per million (ppm) and 1022 ppm were detected for PCBs and PAHs, respectively;
- A 2002 effort, funded by a USEPA-GLNPO grant, assessed and defined the extent of sediment contamination in the study area; Maximum concentrations of 36 ppm and 244 ppm were detected for PCBs and PAHs, respectively;
- An ongoing concept design effort to provide conceptual level evaluations of navigation conditions, short- and long-term impacts, technical feasibility, implementability, reliability, constructability, and concept-level costs for a variety of alternatives. This evaluation will be documented in a Concept Design Report. This project is being conducted under the USACE Great Lakes Remedial Action Plan technical assistance program and is funded jointly by the USACE and WDNR. The USEPA and Port of Milwaukee are also active collaborative partners.

Partnership

Through the sediment assessment and the concept design work, a partnership has formed to collaborate and work cooperatively to achieve the project purpose. Currently, the partnership members include the WDNR, USEPA, USACE, Port of Milwaukee, City of Milwaukee, Milwaukee Metropolitan Sewerage District (MMSD), the Kinnickinnic River Neighborhood Association and other non-government interest groups.

Summary of Alternatives

The alternatives under consideration are outlined below and provided in a quick reference summary format in Table 1 (attached):

Source: USACE & WDNR. April 7, 2004. Kinnickinnic River, Wisconsin - Milwaukee Estuary of Concern - Deepening/Remediation Concept Design Documentation Report. Appendix G.

Alternative 1 – No Action *(included to provide a baseline for comparison with other alternatives)*

- Contaminated sediment removal: none
- Post-project water depth: 0 to 10 feet below Lake Michigan chart datum (577.5 feet IGLD85)
- Anticipated post-project surficial sediment PCB concentration: no change (range: less than/equal to 1 ppm to 6 ppm)
- Project-related shoreline work: none
- Recreational and commercial navigation use of the area would continue to resuspend contaminated sediments. The transport of contaminated sediments in the water column would continue to impair beneficial uses in the areas, including the harbor and Lake Michigan
- Estimated Project Cost: $0

Alternative 2: Deepen Bank to Bank

Alternative 2a – Deepen bank to bank (dredge to historic navigation depth)

- Sediment removal: approximately 192,000 cubic yards (CY)
- Post-project water depth: 20.5 to 24.5 feet below Lake Michigan Chart Datum (577.5 feet IGLD85)
- Anticipated post-project surficial sediment PCB concentration: less than/equal to 1 ppm
- Project-related shoreline work: install seawalls along entire project area shoreline
- Estimated Project Cost: $15 Million to $36 Million

Alternative 2b – Deepen bank to bank (dredge to minimum navigation depth)/isolate contaminated sediments

- Sediment removal: approximately 92,000 CY
- Post-project water depth: 11 feet below Lake Michigan Chart Datum (577.5 feet IGLD85)
- Contaminated sediment isolation: install 3-foot thick, engineered cap over project area
- Anticipated post-capping surficial sediment PCB concentration: less than/equal to 1 ppm (note: post dredging PCB concentrations would range from <1 to 36 ppm)
- Project-related shoreline work: install seawalls along entire project area shoreline
- Estimated Project Cost: $13 Million to $24 Million

Alternative 2c – Deepen bank to bank (dredge to minimum navigation depth based on historic low water level)/isolate contaminated sediments

- Sediment removal: approximately 110,000 CY
- Post-project water depth: 12.5 feet below Lake Michigan Chart Datum (577.5 feet IGLD85)
- Contaminated sediment isolation: install 3-foot thick, engineered cap over project area
- Anticipated post-capping surficial sediment PCB concentration: less than/equal to 1 ppm to 5 ppm (note: post dredging PCB concentrations would range from <1 to 21 ppm)
- Project-related shoreline work: install seawalls along entire project area shoreline
- Estimated Project Cost: $15 Million to $26 Million

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Alternative 3 – 80-foot wide navigation channel

Alternative 3a – 80-foot wide navigation channel (dredge to historic navigation depth)

- Sediment removal: approximately 170,000 CY
- Post-project water depth: 20.5 to 24.5 feet below Lake Michigan Chart Datum (577.5 feet IGLD85) for 80-foot wide channel with side slope transitioning to 11 feet near the shoreline
- Anticipated post-project surficial sediment PCB concentration:
  - Channel: less than/equal to 1 ppm
  - Side slope: variable over a large range and could exceed 3 ppm at some locations
- Project-related shoreline work: no alteration of existing steel sheet piling of known depth; replace concrete and Wakefield timber seawalls; install seawall along unprotected south shoreline of Section 3
- Estimated Project Cost: $12 Million to $31 Million

Alternative 3b – 80-foot wide navigation channel (dredge to a range between the historic navigation depth and the minimum navigation depth)

- Sediment removal: approximately 134,000 CY
- Post-project water depth: 16.5 to 20.5 feet below Lake Michigan Chart Datum (577.5 feet IGLD85) for 80-foot wide channel with side slope transitioning to 11 feet near the shoreline
- Anticipated post-project surficial sediment PCB concentration:
  - Channel: less than/equal to 1ppm to 3 ppm
  - Side slope: variable over large range and could exceed 3 ppm at some locations
- Project-related shoreline work: no alteration of existing steel sheet piling of known depth; replace concrete and Wakefield timber seawalls; install seawall along unprotected south shoreline of Section 3
- Estimated Project Cost: $11 Million to $25 million

Next Steps	**Completion Date**
▪ Design:	
o Final Concept Design Report	February 2004
o Design/Plans & Specifications	August 2004
▪ Implementation:	
o Permit acquisition	August 2004
o Anticipated Contract Award (Pending funding)	September 2004

Points of Contact

Please contact any of the following individuals for additional information:

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Source: USACE & WDNR. April 7, 2004. Kinnickinnic River, Wisconsin - Milwaukee Estuary of Concern - Deepening/Remediation Concept Design Documentation Report. Appendix G.

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Source: USACE & WDNR. April 7, 2004. Kinnickinnic River, Wisconsin - Milwaukee Estuary of Concern - Deepening/Remediation Concept Design Documentation Report. Appendix G.

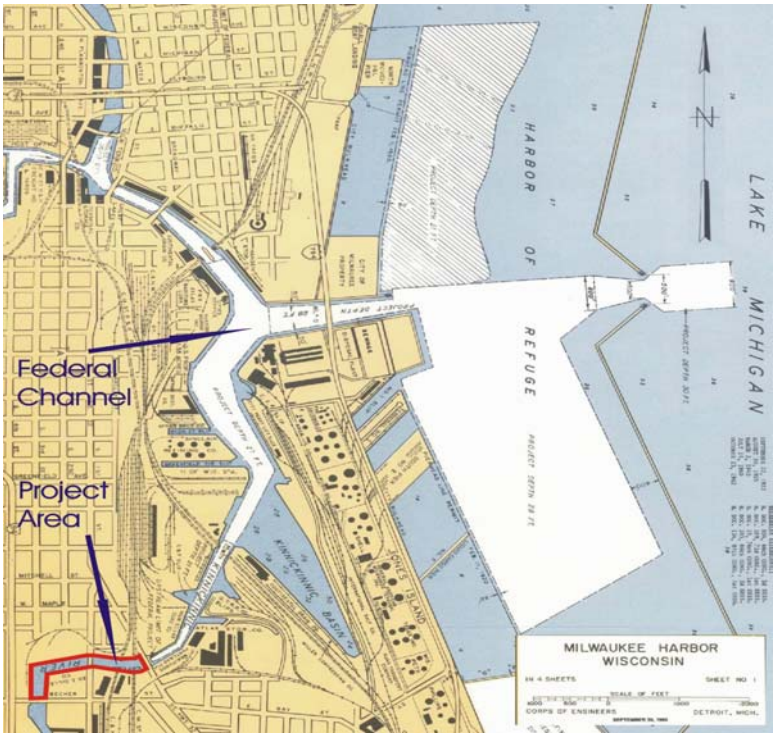

Figure 1
Project Location Map
Kinnickinnic River
Sediment Removal Concept Plan
Milwaukee, Wisconsin

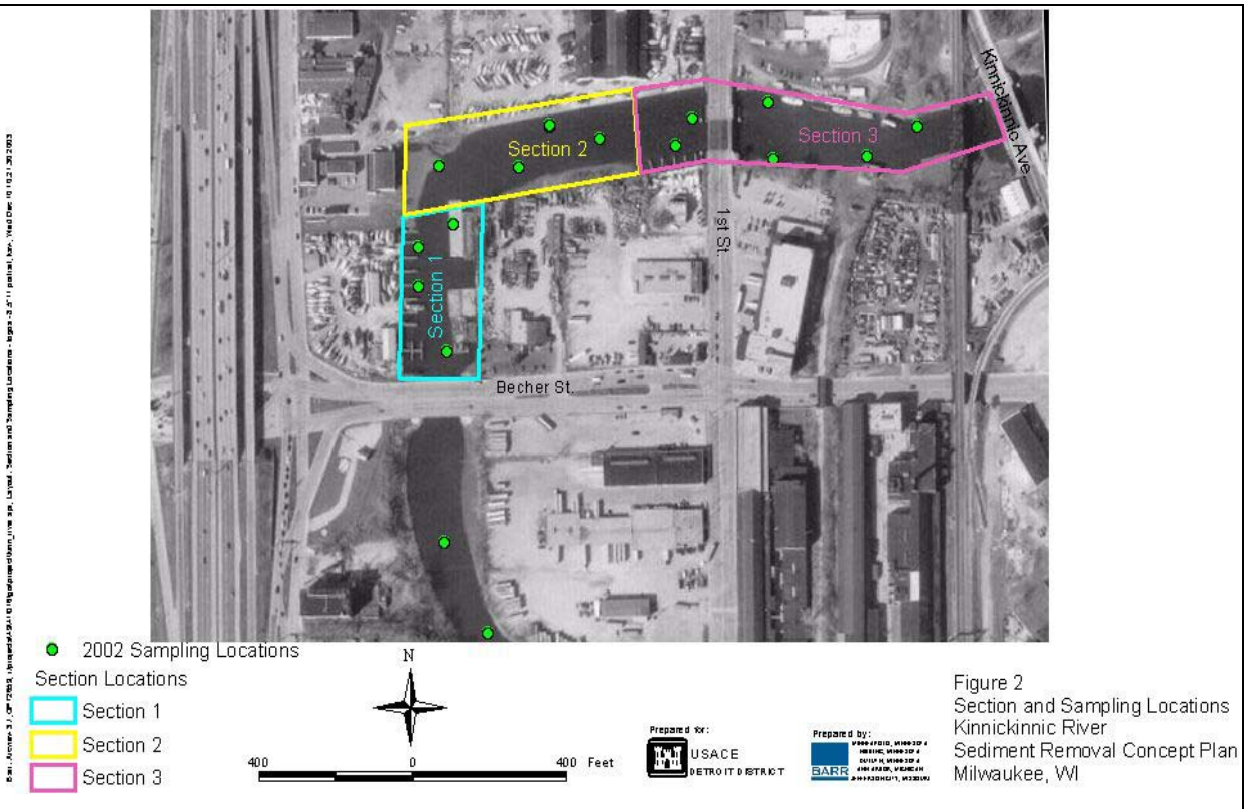

Figure 2
Section and Sampling Locations
Kinnickinnic River
Sediment Removal Concept Plan
Milwaukee, WI

Source: USACE & WDNR. April 7, 2004. Kinnickinnic River, Wisconsin - Milwaukee Estuary of Concern - Deepening/Remediation Concept Design Documentation Report. Appendix G.

Table 1: Deepening/Restoration Alternative Summary

Kinnickinnic River, Wisconsin

Information Sheet - January 2004

Alternative Description	Project Objective [1]	Volume PCB Contaminated Sediment Removed (CY)	Post-Project Water Depth[1] (Feet)	Post-Project Surficial Sediment PCB Concentration[2] (ppm)	Shoreline Impacts	Shoreline Work [3] (Cost in Million $)	Cost Range[4] (Million $)
1 No Action	None	0	No change-0 to 10	≤1 to 6	None	None	$0
2a Deepen Bank to Bank (historic navigation depth)	Restore historic navigation depth (21 feet of water)	192,000	20.5 to 24.5	≤ 1	Expect failure: ~4,000 linear feet total, unprotected banks and all seawalls	Replace/Install seawalls along impacted shoreline (Est. cost: $4.8)	$15 to $36
2b Deepen bank to bank	Provide minimum navigation depth; isolate (cap) contaminated sediments	92,000	11.0	≤ 1 (Post capping) <1 to 36 (Post dredging)	Expect failure: ~4,000 linear feet total, unprotected banks and all seawalls	Replace/Install seawalls along impacted shoreline (Est. cost: $4.8)	$13 to $24
2c Deepen Bank to Bank	Provide minimum navigation depth referenced to historic low water level; isolate (cap) contaminated sediments	110,000	12.5	≤ 1 (Post capping) <1 to 21 (Post dredging)	Expect failure: ~4,000 linear feet total, unprotected banks and all seawalls	Replace/Install seawalls along impacted shoreline (Est. cost: $4.8)	$15 to $26
3a 80- foot wide navigation channel	Restore historic navigation depth	170,000	Channel: 20.5 to 24.5 Side slope: edge of channel to 11 ft near shoreline.	≤ 1 (80-foot channel)	Expect failure: ~3,000 linear feet total, Concrete & Wakefield timber seawalls & south shore of section 3	Replace/install seawalls along impacted shoreline (Est. cost: $3.3)	$12 to $31
3b 80-foot wide navigation channel	Provide various depths between the minimum & historic navigation depths throughout project area	134,000	Channel: 16.5 to 20.5 Side slope: edge of channel to 11 ft near shoreline	≤ 1 to 3 (80-foot channel)	Expect failure: ~3,000 linear feet total, Concrete & & south shore of section 3	Replace/install seawalls along impacted shoreline (Est. cost: $3.3)	$11 to $25

1 All water levels are referenced to the International Great Lakes Datum (IGLD85), which is a Lake Michigan water surface elevation of 577.5 feet.
2 For 3a and 3b: PCB concentrations on the side slope may vary over a large range and could exceed 3 ppm at some locations.
3 Seawall replacement costs do not include contractor mob/demobilization, engineering design, construction observation, and project contingencies.
4 The range represents the costs of each alternative using various dredged material disposal methods